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6287341 wld due to Rest. of method of
prep. and implanting.

6134578 method of prep.



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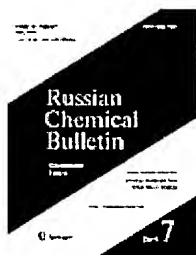
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Mechanism of solid-state conversion of
non-stoichiometric hydroxyapatite to
diphase calcium phosphate

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Abstract Two non-stoichiometric hydroxyapatites (n-HA) with Ca/P molar ratios of 1.50 and 1.58 and one stoichiometric hydroxyapatite (s-HA) with Ca/P = 1.67 were prepared from chemically pure $\text{CaHPO}_4 \cdot 2\text{H}_2\text{O}$ and KOH. After sintering at 1050 °C for 4 h, n-HA with Ca/P = 1.50 was transformed into $\beta\text{-Ca}_3(\text{PO}_4)_2$, n-HA with Ca/P = 1.58 was converted to diphase calcium phosphate (DCP), while s-HA underwent no chemical transformations. The sintered and unsintered samples of hydroxyapatite were studied by IR spectroscopy, chemical analysis,

HA not
necessarily in
stoichiometric
proportion.

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and X-ray diffraction analysis. The crystallite dimensions were calculated, and a model for the DCP structure was proposed. The mechanism of the solid-state n-HA to DCP conversion was proposed on the basis of this model and published values of the volume diffusion coefficients of the OH^- , Ca^{2+} , and PO_4^{3-} ions at 1000 °C.

hydroxyapatite - calcium
phosphate - solid-state reactions -
X-ray diffraction analysis - IR
spectroscopy

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